

**THAT WHICH IS CLAIMED IS:**

1           1. A method for enhancing vision in an eye, the method comprising:  
2                   determining an optical path difference between a plane wave and a  
3                   wavefront emanating from an eye;  
4                   producing a plurality of laser beam shots;  
5                   applying said plurality of laser beam shots to the eye in a manner that is  
6                   based in part on the optical path difference between the plane wave and the wavefront  
7                   emanating from the eye; and  
8                   removing tissue from the cornea of the eye in a manner that reduces the  
9                   optical path difference between the plane wave and the wavefront emanating from the  
10                  eye; whereby visual defects of the eye are reduced.

1           2. The method of claim 1 in which the size of a laser beam shot is less than  
2                  about 1 mm.

1           3. The method of claim 1 in which the size of a laser beam shot is less than  
2                  about 0.5 mm.

1           4. The method of claim 1 in which the size of the laser beam shots varies.

1           5. The method of claim 1 in which the vision of the eye is enhanced from an  
2                  eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1           6. The method of claim 1 in which the vision of the eye is enhanced from an  
2                  eye requiring a correction of greater than -3 diopters to an eye having about 20/20  
3                  vision.

1           7. The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -3 diopters to an eye having better than 20/20  
3 vision.

1           8. The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -3 diopters to an eye having at least 20/10  
3 vision.

1           9. The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1           10. The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -6 diopters to an eye having about 20/20  
3 vision.

1           11. The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -6 diopters to an eye having better than 20/20  
3 vision.

1           12. The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -6 diopters to an eye having at least 20/10  
3 vision.

1           13. The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1           14. The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than -8 diopters to an eye having about 20/40  
3 vision.

1           **15.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2       eye requiring a correction of greater than -8 diopters to an eye having better than 20/40  
3       vision.

1           **16.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2       eye requiring a correction of greater than -8 diopters to an eye having at least 20/20  
3       vision.

1           **17.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2       eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1           **18.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2       eye requiring a correction of greater than 3 diopters to an eye having about 20/20  
3       vision.

1           **19.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2       eye requiring a correction of greater than 3 diopters to an eye having better than 20/20  
3       vision.

1           **20.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2       eye requiring a correction of greater than 3 diopters to an eye having at least 20/10  
3       vision.

1           **21.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2       eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1           **22.**   The method of claim 1 in which the vision of the eye is enhanced from an  
2       eye requiring a correction of greater than 6 diopters to an eye having about 20/20  
3       vision.

1           **23.** The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 6 diopters to an eye having better than 20/20  
3 vision.

1           **24.** The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 6 diopters to an eye having at least 20/10  
3 vision.

1           **25.** The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1           **26.** The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 8 diopters to an eye having about 20/40  
3 vision.

1           **27.** The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 8 diopters to an eye having better than 20/40  
3 vision.

1           **28.** The method of claim 1 in which the vision of the eye is enhanced from an  
2 eye requiring a correction of greater than 8 diopters to an eye having at least 20/20  
3 vision.

1           **29.** A method for enhancing vision in an eye, the method comprising:  
2                 determining an optical path difference between a plane wave and a  
3                 wavefront emanating from an eye;  
4                 producing a plurality of laser beam shots;  
5                 mechanically removing the epithelium of the eye to expose bowmans  
6                 membrane;

7                         applying said plurality of laser beam shots to the bowmans membrane in a  
8 manner that is based in part on the optical path difference between the plane wave and  
9 the wavefront emanating from the eye; and,

10                         said plurality of laser beam shots removing tissue from the eye in a  
11 manner that reduces the optical path difference between the plane wave and the  
12 wavefront emanating from the eye; whereby the vision of the eye is improved.

1                         **30.**    The method of claim 29 in which the size of a laser beam shot is less than  
2 about 1 mm.

1                         **31.**    The method of claim 29 in which the size of a laser beam shot is less than  
2 about 0.5 mm.

1                         **32.**    The method of claim 29 in which the size of the laser beam shots varies.

1                         **33.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1                         **34.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -3 diopters to an eye having about 20/20  
3 vision.

1                         **35.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -3 diopters to an eye having better than  
3 20/20 vision.

1                         **36.**    The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than -3 diopters to an eye having at least 20/10  
3 vision.

1           **37.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1           **38.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than -6 diopters to an eye having about 20/20  
3       vision.

1           **39.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than -6 diopters to an eye having better than  
3       20/20 vision.

1           **40.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than -6 diopters to an eye having at least 20/10  
3       vision.

1           **41.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1           **42.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than -8 diopters to an eye having about 20/40  
3       vision.

1           **43.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than -8 diopters to an eye having better than  
3       20/40 vision.

1           **44.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than -8 diopters to an eye having at least 20/20  
3       vision.

1           **45.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1           **46.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 3 diopters to an eye having about 20/20  
3       vision.

1           **47.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 3 diopters to an eye having better than  
3       20/20 vision.

1           **48.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 3 diopters to an eye having at least 20/10  
3       vision.

1           **49.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1           **50.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 6 diopters to an eye having about 20/20  
3       vision.

1           **51.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 6 diopters to an eye having better than  
3       20/20 vision.

1           **52.**   The method of claim 29 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 6 diopters to an eye having at least 20/10  
3       vision.

1           **53.** The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1           **54.** The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having about 20/40  
3 vision.

1           **55.** The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having better than  
3 20/40 vision.

1           **56.** The method of claim 29 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having at least 20/20  
3 vision.

1           **57.** A method for enhancing vision in an eye, the method comprising:  
2                 determining an optical path difference between a plane wave and a  
3 wavefront emanating from an eye;  
4                 producing a plurality of laser beam shots;  
5                 displacing a portion of the eye to expose the stroma of the eye;  
6                 applying said plurality of laser beam shots to the exposed stroma in a  
7 manner that is based in part on the optical path difference between the plane wave and  
8 the wavefront emanating from the eye;  
9                 said plurality of laser beam shots removing tissue from the eye in a  
10 manner that reduces the optical path difference between the plane wave and the  
11 wavefront emanating from the eye; and,  
12                 replacing the displaced portion of the eye; whereby the vision of the eye is  
13 improved.

1           **58.**   The method of claim 57 in which the size of a laser beam shot is less than  
2           about 1 mm.

1           **59.**   The method of claim 57 in which the size of a laser beam shot is less than  
2           about 0.5 mm.

1           **60.**   The method of claim 57 in which the size of the laser beam shots varies.

1           **61.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -3 diopters to an eye having perfect vision.

1           **62.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -3 diopters to an eye having about 20/20  
3           vision.

1           **63.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -3 diopters to an eye having better than  
3           20/20 vision.

1           **64.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -3 diopters to an eye having at least 20/10  
3           vision.

1           **65.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -6 diopters to an eye having perfect vision.

1           **66.**   The method of claim 57 in which the vision of the eye is enhanced from  
2           an eye requiring a correction of greater than -6 diopters to an eye having about 20/20  
3           vision.

1           **67.**   The method of claim 57 in which the vision of the eye is enhanced from  
2   an eye requiring a correction of greater than -6 diopters to an eye having better than  
3   20/20 vision.

1           **68.**   The method of claim 57 in which the vision of the eye is enhanced from  
2   an eye requiring a correction of greater than -6 diopters to an eye having at least 20/10  
3   vision.

1           **69.**   The method of claim 57 in which the vision of the eye is enhanced from  
2   an eye requiring a correction of greater than -8 diopters to an eye having perfect vision.

1           **70.**   The method of claim 57 in which the vision of the eye is enhanced from  
2   an eye requiring a correction of greater than -8 diopters to an eye having about 20/40  
3   vision.

1           **71.**   The method of claim 57 in which the vision of the eye is enhanced from  
2   an eye requiring a correction of greater than -8 diopters to an eye having better than  
3   20/40 vision.

1           **72.**   The method of claim 57 in which the vision of the eye is enhanced from  
2   an eye requiring a correction of greater than -8 diopters to an eye having at least 20/20  
3   vision.

1           **73.**   The method of claim 57 in which the vision of the eye is enhanced from  
2   an eye requiring a correction of greater than 3 diopters to an eye having perfect vision.

1           **74.**   The method of claim 57 in which the vision of the eye is enhanced from  
2   an eye requiring a correction of greater than 3 diopters to an eye having about 20/20  
3   vision.

1           **75.**   The method of claim 57 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 3 diopters to an eye having better than  
3       20/20 vision.

1           **76.**   The method of claim 57 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 3 diopters to an eye having at least 20/10  
3       vision.

1           **77.**   The method of claim 57 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 6 diopters to an eye having perfect vision.

1           **78.**   The method of claim 57 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 6 diopters to an eye having about 20/20  
3       vision.

1           **79.**   The method of claim 57 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 6 diopters to an eye having better than  
3       20/20 vision.

1           **80.**   The method of claim 57 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 6 diopters to an eye having at least 20/10  
3       vision.

1           **81.**   The method of claim 57 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 8 diopters to an eye having perfect vision.

1           **82.**   The method of claim 57 in which the vision of the eye is enhanced from  
2       an eye requiring a correction of greater than 8 diopters to an eye having about 20/40  
3       vision.

1           **83.** The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having better than  
3 20/40 vision.

1           **84.** The method of claim 57 in which the vision of the eye is enhanced from  
2 an eye requiring a correction of greater than 8 diopters to an eye having at least 20/20  
3 vision.

1           **85.** A method for enhancing vision in an eye, the method comprising:  
2                 determining an optical path difference between a plane wave and a  
3 wavefront emanating from an eye;  
4                 producing a plurality of laser beam shots;  
5                 applying said plurality of laser beam shots to the eye in a manner to  
6 create two different focus zones and that is based in part on the optical path difference  
7 between the plane wave and the wavefront emanating from the eye; and,  
8                 said plurality of laser beam shots removing tissue from the eye in a  
9 manner that reduces the optical path difference between the plane wave and the  
10 wavefront emanating from the eye; whereby the vision of the eye is improved.